Appendix N. Documentation Related to Nutrient Criteria for Lakes and Reservoirs, Final Regulation Agency Background Document.

Virginia Regulatory Town Hall

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Final Regulation
Agency Background Document

Approving authority name	State Water Control Board
Virginia Administrative Code (VAC) citation	9 VAC 25 -260
Regulation title	Water Quality Standards
Action title	Amendments to Water Quality Standards – Criteria to Protect the Designated Uses of Lakes and Reservoirs from the Impacts of Nutrients
Document preparation date	

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Orders 21 (2002) and 58 (1999), and the *Virginia Register Form, Style, and Procedure Manual.*

Brief summary

Please provide a brief summary (no more than 2 short paragraphs) of the proposed new regulation, proposed amendments to the existing regulation, or the regulation proposed to be repealed. Alert the reader to all substantive matters or changes. If applicable, generally describe the existing regulation. Also, please include a brief description of changes to the regulation from publication of the proposed regulation to the final regulation.

Amendments are proposed to the state's Water Quality Standards regulation to add new numerical and narrative criteria to protect designated uses of man-made lakes and reservoirs as well as the two natural lakes in the state from the impacts of nutrients. The rulemaking also proposes clarifying that the existing dissolved oxygen criteria during times of thermal stratification should only apply to the upper layer (epilimnion) in man-made lakes and reservoirs where nutrient enrichment is controlled by applicable nutrient criteria in section 9 VAC 25-260-187 of the regulation.

Since publication of the proposal, the following changes have been made: reassignment of Lake Whitehurst from a cool to a warm water fishery and Burke Lake from a warm water to a fertilized fishery with the appropriate changes in the numeric criteria, clarification that water quality assessment of nutrient criteria (chlorophyll *a* and total phosphorus) will be based on the two most recent monitoring years with available data, addition of a process for confirmation of use impairments when the criteria are exceeded, and retention of the nutrient enriched waters designations in 9 VAC 25-260-350 for Smith Mountain Lake, Lake Chesdin, South Fork Rivanna Reservoir, and Claytor Lake. In addition, as a result of the retention of the nutrient enriched waters designations in 9 VAC 25-260-350, proposed deletion of references to the designations in 9 VAC 25-260-415, 420, 450 and 540 were reinstated in the final regulation.

Statement of final agency action

Please provide a statement of the final action taken by the agency including (1) the date the action was taken, (2) the name of the agency taking the action, and (3) the title of the regulation.

The State Water Control Board adopted at their June 1, 2006 meeting amendments to the Water Quality Standards regulation 9 VAC 25-260) to protect the designated uses of lakes and reservoirs from the impacts of nutrients:

- Definitions in 9 VAC 25-260-5 for five terms (algicides, epilimnion, lacustirne, man-made lake or reservoir, and natural lake) introduced in the proposed text amendments,
- Special Standards in 9 VAC 25-260-310 for numerical nutrient criteria to maintain the current water quality of the two natural lakes (Mountain Lake and Lake Drummond) in Virginia with references in the River Basin Tables 9 VAC 25-260-480 and 540,
- Numerical criteria for dissolved oxygen 9 VAC 25-260-50 clarification that during times of thermal stratification, the existing dissolved oxygen criteria should only apply to the upper layer in the lake-like portion of man-made lakes and reservoirs covered by nutrient criteria in 9 VAC 25-260-187, and
- Creation of a section 9 VAC 25-260-187 under Standards with More Specific Application for numerical chlorophyll *a* and total phosphorus criteria for 116 listed man-made lakes, allowance for site specific modifications to the criteria if the nutrient criteria specified for a man-made lake or reservoir do not provide for the attainment and maintenance of the water quality standards of downstream waters, reassignment of Lake Whitehurst from a cool to a warm water fishery and Burke Lake from a warm water to a fertilized fishery with the appropriate changes in the numeric criteria, clarification that water quality assessment of nutrient criteria (chlorophyll a and total phosphorus) will be based on the two most recent monitoring years with available data, and the addition of a process for confirmation of use impairments when the criteria are exceeded.

Legal basis

Please identify the state and/or federal legal authority to promulgate this proposed regulation, including (1) the most relevant law and/or regulation, including Code of Virginia citation and General Assembly chapter numbers, if applicable, and (2) promulgating entity, i.e., agency, board, or person. Describe the legal authority and the extent to which the authority is mandatory or discretionary.

§ 62.1-44.15(3a) of the Code of Virginia, as amended, mandates and authorizes the State Water Control Board to establish water quality standards and policies for any State waters consistent with the purpose and general policy of the State Water Control Law, and to modify, amend or cancel any such standards or policies established. The federal Clean Water Act at 303(c) mandates the State Water Control Board to review and, as appropriate, modify and adopt water quality standards. The corresponding federal water quality standards regulation at 40 CFR 131.6 describes the minimum requirements for water quality standards. The minimum requirements are use designations, water quality criteria to protect the designated uses and an antidegradation policy. All of the citations mentioned describe mandates for water quality standards.

Web Address sites where citations can be found:

Federal Regulation web site
http://www.epa.gov/epahome/cfr40.htm

Clean Water Act web site
http://www4.law.cornell.edu/uscode/33/1313.html

State Water Control Law (Code of Virginia) web site
http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.2
http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15

The Environmental Protection Agency (EPA) Water Quality Standards regulation (40 CFR 131.12) is the regulatory basis for the EPA requiring the states to establish within the antidegradation policy the Exceptional State Waters category and the eligibility decision criteria for these waters. EPA retains approval/disapproval oversight, but delegates to the states the election and designation of specific water bodies as Exceptional State Waters.

The Office of the Attorney General has certified that the agency has the statutory authority to promulgate final text of the regulation.

Purpose

Please explain the need for the new or amended regulation. Describe the rationale or justification of the proposed regulatory action. Detail the specific reasons it is essential to protect the health, safety or welfare of citizens. Discuss the goals of the proposal and the problems the proposal is intended to solve.

Runoff from “non-point” sources such as urban, agricultural, and forest land, combined with discharges from industrial and municipal sources, have resulted in excessive levels of nutrients, particularly phosphorus, in some of the State’s waters, including lakes and reservoirs. Although nutrients such as phosphorus are necessary for the growth of algae which are an essential part of the food chain, problems occur when an overabundance of these nutrients cause excessive growths of algae. Excessive amounts of aquatic plants, particularly algae, can discolor the water, create taste and odor problems for water supply mangers, reduce water clarity, and block sunlight from

submerged aquatic vegetation. Another side effect of excessive algal blooms is impairment of recreational activities in the water body due to the aesthetically displeasing appearance of the water. The most serious problem resulting from algal growth occurs when the plants die and decay; at that time, they deplete the oxygen level of the water to the point where fish and other aquatic organisms cannot survive. It is important, therefore, to develop nutrient controls so that the symptoms of nutrient enrichment, i.e. the excessive growth of plants and fluctuating levels of dissolved oxygen, are avoided.

This rulemaking is needed to establish the appropriate nutrient criteria for lakes and reservoirs in the Commonwealth of Virginia because:

1) The U.S. Environmental Protection Agency (EPA) has published ecoregion water body specific nutrient related criteria and stated its intent in a National Nutrient Strategy (1998) to promulgate these default nutrient criteria for a state if the state does not adopt nutrient criteria by December 31, 2004 or submit a nutrient development plan with timelines for adoption of this criteria that are accepted by EPA. As discussed below, Virginia decided to take the latter approach.

2) These standards will be used in setting Virginia Pollutant Discharge Elimination System Permit limits and for evaluating the waters of the Commonwealth for inclusion in the Clean Water Act 305(b) report and on the 303(d) list, and

3) Waters not meeting standards will require development of a Total Maximum Daily Load (TMDL) under section 303(d) of the Clean Water Act. Adoption of water body type specific criteria and uses is necessary to define the most accurate water quality goals for clean up or TMDL development and to protect the appropriate aquatic life and recreational uses of lakes and reservoirs.

Since Virginia intended to develop state specific criteria rather than adopt the EPA published national nutrient criteria, the state submitted to EPA a nutrient criteria development plan for Virginia that EPA has accepted. EPA will use the plan to track the State's progress in nutrient criteria development. If the Commonwealth keeps to the schedule contained in the Plan, EPA is not expected to promulgate nutrient criteria for the State.

Virginia is committed through its Nutrient Criteria Development Plan to adopt new and revised water quality standards for estuaries, lakes and reservoirs, and rivers and streams. The Department is using a two step process - technical development of nutrient criteria and administrative adoption of the criteria - for each water body type. Prioritization of waters for criteria development and adoption is based on availability of data to proceed with a rulemaking. This sequential approach to the development and regulatory adoption of nutrient criteria was initiated in 2003 for estuaries with adoption of nutrient criteria for the Chesapeake Bay in 2005; the current rulemaking is for lakes and reservoirs and in 2008 a separate rulemaking will be initiated for rivers and streams.

Since mid-2003 an Academic Advisory Committee (AAC) on Freshwater Nutrient Criteria - that was formed by the Virginia Water Resources Research Center under contract to DEQ - has been providing advice to the Department on nutrient criteria development for lakes and reservoirs. The documents produced by the AAC and used by the Department in developing these amendments can be found on the Department's web site at: http://www.deq.virginia.gov/wqs/rule.html#NUT2.

Substance

Please identify and explain the new substantive provisions, the substantive changes to existing sections, or both where appropriate. A more detailed discussion is required under the "All changes made in this regulatory action" section.

The substantive changes that are being proposed in this regulatory action are: special nutrient standards for the two natural lakes in Virginia – Mountain Lake and Lake Drummond, chlorophyll *a* and total phosphorus criteria for 116 man-made lakes and reservoirs that the Department has previously monitored or plans to monitor (The total phosphorus criteria apply only when algicide treatments are made during the monitoring period of April 1 through October 31) and application of existing dissolved oxygen criteria during thermal stratification to only the upper layer in the lake-like portion of man-made lakes and reservoirs that will be protected from the effects of nutrient enrichment by the proposed numerical criteria. In addition, a statement is included to allow for site specific modifications to the criteria if the nutrient criteria specified for a man-made lake or reservoir do not provide for the attainment and maintenance of the water quality standards of downstream waters; this was proposed to address the phased development of nutrient criteria for lakes and reservoirs preceding those for rivers and streams.

In response to public comment, the following additional changes were made to proposed section 187: Reassigns Lake Whitehurst from a cool to a warm water fishery and Burke Lake from a warm water to a fertilized fishery with the appropriate changes in the numeric criteria. Clarifies that water quality assessment of nutrient criteria (chlorophyll a and total phosphorus) will be based on the two most recent monitoring years with available data. Adds a process for confirmation of use impairments when the criteria are exceeded.

This rulemaking effort also involved an evaluation of the applicability of Virginia's current regulatory program (Nutrient Enriched Waters) for controlling nutrients in surface waters, including lakes and reservoirs. The concept of Nutrient Enriched Waters was not incorporated into the final approach selected by the State, so a plan was developed to transition from the existing regulatory Nutrient Enriched Waters listings to the new regulatory approach by sequentially deleting currently designated Nutrient Enriched Waters as the Commonwealth adopts nutrient criteria for those waters. Consideration was given to the repeal of the following nutrient enriched waters designations in 9 VAC 25-260-350, Designation of Nutrient Enriched Waters: Smith Mountain Lake, Lake Chesdin, South Fork Rivanna Reservoir, and Claytor Lake. However, a recommendation was received during the public comment period to retain the Nutrient Enriched Waters designations for these four lakes because of the historical protection from nutrient enrichment that the companion Nutrient Policy has provided by requiring a monthly average total phosphorus effluent limit of 2 mg/L for point source discharges over a certain flow. Therefore, the proposed deletion of the Nutrient Enriched Waters designation for the four lakes has been removed from the final proposal in Attachment 3.

Issues

Please identify the issues associated with the proposed regulatory action, including:
1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions;
2) the primary advantages and disadvantages to the agency or the Commonwealth; and
3) other pertinent matters of interest to the regulated community, government officials, and the public. If there are no disadvantages to the public or the Commonwealth, please indicate.

The primary advantage/benefit to the public is that the proposed nutrient criteria, once implemented fully, will result in the protection of the fishery and other associated recreational uses in identified lakes and reservoirs from the effects of nutrient enrichment. The disadvantage is that 22 entities

currently discharging to these waters may have to incur the costs of installing treatment for nutrient reduction

The advantage to the agency is that the adoption of these criteria will continue to meet the phased obligations to EPA of the Commonwealth's nutrient criteria development plan and to develop nutrient criteria appropriate for Virginia waters instead of EPA promulgating default national criteria.

The advantage to the Commonwealth is that the adoption of these criteria will help protect the public water supplies and recreational lakes listed in these proposed amendments from the effects of nutrient enrichment.

There is no disadvantage to the agency or the Commonwealth that will result from the adoption of these amendments.

Pertinent matters of interest to the regulated community, government officials, and the public are the potential costs to meet the requirements of this regulation.

Changes made since the proposed stage

Please describe all changes made to the text of the proposed regulation since the publication of the proposed stage. For the Registrar's office, please put an asterisk next to any substantive changes.

Section number	Requirement at proposed stage	What has changed	Rationale for change
9 VAC 25-260-187	Lists man-made lakes and reservoirs that the Department has previously monitored or plans to monitor and the water body specific chlorophyll *a* and total phosphorus criteria to protect aquatic life and recreational designated uses in these waters from the impacts of nutrients. Allows for site specific modifications to the criteria if the nutrient criteria specified for a man-made lake or reservoir do not provide for the attainment and maintenance of the water quality standards of downstream waters.	Reassigns Lake Whitehurst from a cool to a warm water fishery and Burke Lake from a warm water to a fertilized fishery with the appropriate changes in the numeric criteria. Clarifies that water quality assessment of nutrient criteria (chlorophyll a and total phosphorus) will be based on the two most recent monitoring years with available data. Adds a process for confirmation of use impairments criteria are exceeded.	Response to substantive public comment.
9 VAC 25-260-350	Four lakes (Smith Mountain Lake, lake Chesdin, South Fork Rivanna Reservoir, and Claytor Lake) listed as "nutrient enriched waters" were proposed to be	DEQ will recommend that the Board retain the Nutrient Enriched Waters designations for the four lakes.	Waters listed in this section are subject to phosphorus limits under the Nutrient Enriched Waters Policy (9 VAC 25-40 et seq.) Public

	removed from the list of nutrient enriched waters since the new method of controlling nutrients in these and other man-made lakes and reservoirs will be from implementation of the criteria set forth in 9 VAC 25-260-187.		comment indicated that the companion Nutrient Policy effluent limits on point sources discharges to the four lakes has historically provided protection from nutrient enrichment and should be retained to continue to provide this additional layer of protection from use impairments due to nutrients.
9 VAC 25-260-415	Deletes reference in the James River Basin, Appomattox to the "nutrient enriched waters" status of Lake Chesdin as NEW-2 because was proposed for repeal in 9 VAC 25-260-350.	DEQ will recommend that the Board retain the Nutrient Enriched Waters designation.	Waters listed in this section are subject to phosphorus limits under the Nutrient Enriched Waters Policy (9 VAC 25-40 et seq.) Public comment indicated that the companion Nutrient Policy effluent limits on point sources discharges to the four lakes has historically provided protection from nutrient enrichment and should be retained to continue to provide this additional layer of protection from use impairments due to nutrients.
9 VAC 25-260-420	Deletes reference in the James River Basin, Middle to the "nutrient enriched waters" status of South Fork Rivanna Reservoir as NEW-3 because was proposed for repeal in 9 VAC 25-260-350.	DEQ will recommend that the Board retain the Nutrient Enriched Waters designation.	Waters listed in this section are subject to phosphorus limits under the Nutrient Enriched Waters Policy (9 VAC 25-40 et seq.) Public comment indicated that the companion Nutrient Policy effluent limits on point sources discharges to the four lakes has historically provided protection from nutrient enrichment and should be retained to continue to provide this additional layer of protection from use impairments due to nutrients.
9 VAC 25-260-450	Deletes reference in the Roanoke River Basin Roanoke subbasin to the "nutrient enriched waters" status of Smith Mountain	DEQ will recommend that the Board retain the Nutrient Enriched Waters designation.	Waters listed in this section are subject to phosphorus limits under the Nutrient Enriched Waters Policy (9 VAC 25-

	Lake as NEW-1 because was proposed for repeal in 9 VAC 25-260-350.		40 et seq.) Public comment indicated that the companion Nutrient Policy effluent limits on point sources discharges to the four lakes has historically provided protection from nutrient enrichment and should be retained to continue to provide this additional layer of protection from use impairments due to nutrients.
9 VAC 25-260-540	Deletes reference in the New River Basin section table to the "nutrient enriched waters" status of Claytor Lake as NEW-4 because was proposed for repeal in 9 VAC 25-260-350.	DEQ will recommend that the Board retain the Nutrient Enriched Waters designation.	Waters listed in this section are subject to phosphorus limits under the Nutrient Enriched Waters Policy (9 VAC 25-40 et seq.) Public comment indicated that the companion Nutrient Policy effluent limits on point sources discharges to the four lakes has historically provided protection from nutrient enrichment and should be retained to continue to provide this additional layer of protection from use impairments due to nutrients.

Public comment

Please summarize all comments received during the public comment period following the publication of the proposed stage, and provide the agency response. If no comment was received, please so indicate.

Commenter	Comment	Agency response
EPA	9 VAC 25-260-310, 9 VAC 25-260-480, and 9 VAC 25-260-540: Support Virginia's decision to incorporate numerical values for its two natural lakes, however unable to find them in the draft. Please indicate what those values will be at your earliest convenience	The natural lake standards are in the special standards and requirements section, 9 VAC 25-260 310 "cc" and "dd" and references to this section are included in the river basin tables. The wording for these special standards can be found on page 1497 of http://legis.state.va.us/codecomm/register/vol22/iss10/v22i10.pdf :

		cc. For Mountain Lake in Giles County, chlorophyll *a* shall not exceed 6 µg/L at a depth of 6 meters and orthophosphate-P shall not exceed 8 µg/L at a depth of one meter or less. dd. For Lake Drummond, located within the boundaries of Chesapeake and Suffolk in the Great Dismal Swamp, chlorophyll *a* shall not exceed 35 µg/L and total phosphorus shall not exceed 40 µg/L at a depth of one meter or less.
EPA	EPA also suggested changes to section 6.2 of the draft agency implementation guidance which addresses when total phosphorus limitations are determined to be required in permitted discharges.	Revision to guidance was developed with input from EPA.
VAMWA, ACSA, ASA, HRSD, PCo, RWSA, UOSA, SCo, WVWA	Supports: • DEQ's reliance on an effects base approach for deriving nutrient criteria, with strong consideration of fisheries. • Application of dissolved oxygen criteria only to the epilimnion during periods of thermal stratification. • DEQ's decision to list specific reservoirs to which the nutrient standards apply. • Decision that total nitrogen and Secchi depth criteria are not necessary.	No response needed.
VAMWA, ACSA, ASA, HRSD, PCo, RWSA, UOSA, SCo, WVWA, SBos	Recommends: • The nutrient standards and related guidance should allow confirmation of use impairments, prior to 303(d) listing as the TMDL process is not intended for the assessment of water bodies, but to correct impairments and a confirmatory process (such as the "Reservoir Use Attainment Evaluation Procedure" introduced by VAMWA to the Ad hoc workgroup) used prior to 303(d) listing could very well reduce the staffing and budgetary demands on DEQ by not requiring TMDLS for lakes that are meeting all designated uses. • Recommended modifications in wording of the regulation. • Phosphorus criteria should only apply if frequent algicide treatments are necessary. Frequent can be defined as more than one per growing season.	Since the AAC in their reports to DEQ had suggested an extra step of review and evaluation prior to an impairment designation for a lake or reservoir with nutrient criteria violations, staff sought the advice of the ACC on how to do this. The AAC suggested that DEQ consult with VDGIF regarding the status of the fishery to determine whether or not the designated use for that water body was being attained. A new subsection has been added to Section 187 to require this extra step when assessing in Clean Water Act §§ 305(b) and 303(d) reports a nutrient criteria violation for a man-made lake or reservoir listed in Section 187.B. Algicide applications are usually tied to algal blooms so even a one time application at the time of a bloom would result in a low or zero chlorophyll reading and likely contribute to a monitoring season value that under represented the levels of algae found during the growing season. The use of total phosphorus values is intended to serve as a

	• Suggests substitute language for proposed section 187.C that allows modification of the nutrient criteria "on a site-specific basis to protect the water quality of downstream waters" to avoid confusing the concepts of site-specific criteria with the permitting task of focusing on both immediate and far-field water quality impacts.	check at such times. This section was included at the request of EPA Region 3 assessment staff to recognize that the phased approach of freshwater nutrient criteria in Virginia with lake criteria preceding criteria for streams and rivers. The wording is consistent with section 10 of the VA surface water quality standards regulation and the federal water quality standards regulation.
WVWA	Requested review of Spring Hollow classification as a cool water fishery because Carvins Cove and Beaverdam are in the same geographic area and approximate elevation but are classed as warm water.	DEQ staff consulted with VDGIF on this issue. It is VDGIF's opinion that the 200 foot depth of Spring Hollow (the depth of the other two reservoirs mentioned are 100 feet or less) and the use of aeration equipment in Spring Hollow have created a habitat suitable for a cool water fishery. If the artificial aeration was discontinued, VDGIF said they would need to reevaluate their current classification.
RWSA, WVWA, LACA, MWV, VMA, VAMWA, HRPDC	Appreciated the opportunity for representation in the Department's nutrient criteria development process for lakes and reservoirs via the advisory committee	No response needed.
VMA, MWV	Supports: • Chlorophyll *a* criteria alone is adequate to protect lakes from eutrophication where algaecides are not used. • Application of the dissolved oxygen criteria to the epilimnion of stratified lakes	No response needed.
VMA, MWV	Recommend additional clarification or guidance: 1. Definition of "man-made lake or reservoir": • Expand the definition of "man-made lake and reservoir" to better define the types of impoundments that will/will not be subject to water quality standards, with specific reference to water body size, retention time, designated uses, and other relevant variables. • Include a use attainability methodology that can be used, where appropriate, to evaluate and refine the designated uses of different made-made lakes and	This issue was discussed at the advisory committee meetings. EPA would not allow exclusion of "waters of the state" in the regulation based on size, depth, etc. The AAC excluded historical lake data if the reservoir had a retention time of less than five days (which indicated it acted more like a flowing rather than standing body of water) and DEQ will consider this factor when evaluating future candidate lakes for listing in Section 187.B. However, neither DEQ staff nor the AAC could locate a source for residence time data for lakes and reservoirs in the Commonwealth. UAAs are already an option offered in the water quality standards regulation.

	reservoirs. EPA 's guidance "Improving the Effectiveness of the Use Attainability (UAA) Process" as relevant foundation of the new Virginia methodology.	
	2. Definitions of "coldwater fishery, cool water fishery, fertilized fishery, and warm water fishery" in the implementation guidance: • Revise temperature limits applicable to stockable and natural trout waters to reflect seasonal variation because cool and cold water reservoirs managed as trout fisheries cannot meet stockable and natural waters temperature limits (21°C and 20°C respectively) in their upper elevations throughout the year. • Inconsistencies in application of these terms in lakes: ➢ The AAC identified Lake Moomaw as a cool water lake, because it is a large multipurpose lake with the top layer managed as a warm water fishery and the bottom layer managed as a cool water fishery. However, DEQ now proposes to list it as a cold water lake. ➢ Douthat Lake is listed as a cool water fishery Bark Camp Lake is listed as a warm water fishery. However, both are stocked with trout in the winter and have minimal trout habitat during summer months.	This suggestion is outside the scope of this rulemaking. VDGIF has confirmed that it is a cold water lake. DEQ consulted with VDGIF. VDGIF's said that a cool water fishery was "borderline" but this classification was chosen because Douthat Lake is located within a state park with a protected watershed and minimal potential for nutrient inputs and the current fishery conditions are not likely to change.
	3. Methods for assessing attainment of criteria: DEQ developed the new criteria using historical observations from a limited number of sampling locations at each lake or reservoir. However, DEQ proposes to assess attainment of the new criteria using monitoring data from other sampling locations that may not be representative of the overall water quality in the lake or reservoir. For example, data collected from isolated sections of a lake may indicate excursions of the criteria, even though data collected from the original sampling locations do not. DEQ should revise its implementation guidance to specify how such data will be used to assess attainment. In particular, DEQ should require that sampling data used to assess attainment be representative of at least	The implementation plan has been modified (sections 4.3 and 5.5) to address these concerns; however, the 90% statistic was not used.

	90% of a lake or reservoir.	
HRPDC, SCo	Set criteria based upon public water supply as the highest use. Regulation needs to recognize reservoirs as a separate use from fisheries and establish relevant criteria or defer to the existing regulations. The overwhelming majority of freshwater lakes in Virginia are man-made reservoirs supplying drinking water. They are not created to act as fisheries, nor are they managed as fisheries. The fact that they support a fish population should not add additional regulatory burden to the utilities that operate them and who are already regulated as finished water suppliers under EPA's Safe Drinking Water Act.	The water quality standards regulation recognizes fisheries as a use in all state waters. To remove a fishery use from a public water supply reservoir, a UAA would have to be conducted as part of a rulemaking to make the use change.
HRPDC	Fishery issues: • In several instances the fishery in a reservoir has been overrated due to DGIF stocking programs to improve fish passage and artificial manipulation (such as installation of aeration systems to control iron and manganese problems)of the reservoirs water quality. • Several reservoirs that are interconnected by canals have been assigned significantly different limits even though the water flows freely between them.	VDGIF has advised DEQ that their fishery classifications are based on habitat suitability under current conditions. If a management practice such as an artificial aeration system was discontinued, VDGIF said they would have to evaluate whether there had been a resultant change in conditions – in this case dissolved oxygen levels - that would impact the fishery potential. After the State Water Control Board had approved proceeding to public hearing and comment on the proposed amendments, members of the ad hoc advisory committee from the City of Norfolk asked DEQ to check with VDGIF regarding the Lake Whitehurst fishery classification. VDGIF confirmed that it is a warm water fishery like the other connected lakes. This change will be reflected in the revised criteria for Lake Whitehurst that will be presented to the State Water Control Board for adoption; staff could not modify a regulation before it went to NOPC after the SWCB had directed staff to proceed with the proposed text to public hearing and comment. This will change the criteria from than a chlorophyll a of 25 µg/l and total phosphorus of 20 µg/l to chlorophyll a of 60 µg/l and total phosphorus of 40 µg/l.
HRPDC	For lakes and reservoirs that are located outside of the political subdivision of the owner, the regulations are unclear as to implementation and funding responsibilities should a TMDL be established.	Each TMDL is different as to how far upstream there is a source that has a downstream effect and therefore needs to be controlled whether it is NPS or PS or a combination of both in origin. Potentially impacted localities and other groups would be invited to participate in this planning process for the TMDL and comment

		opportunities would be provided.
HRPDC	Several reservoirs are managed by DGIF and are actively fertilized to increase the productivity of the fishery. This seems contradictory to the intended goal of the proposed regulation, but at the same time, adds credence to the argument that nutrients are supportive of aquatic life up to a point, in that they increase the primary productivity of the water body. The proposed limits for these fertilized lakes are significantly higher than similar lakes with the same fishery status and located in the same ecoregion and as such, these standards would be appropriate for all freshwater bodies in Virginia,	Three urban ponds (Curtis Lake, Lake Albemarle, and Stonehouse Creek Reservoir) which are managed by VDGIF for fishery production are included in the list of 116 man-made lakes and reservoirs. These fishing ponds are generally quite small and fish production is the primary use. Water clarity suitable for swimming, drinking water, or other such uses is not maintained so those fertilized lakes criteria would not be suitable for lakes and reservoirs with multiple uses.
HRPDC	There has been no empirical evidence put forth suggesting that the proposed nutrient standards are protective of fishery health. In contrast, high Chlorophyll a concentrations are the result of a healthy robust phytoplankton population that is the primary food source of many species of fish and/or their prey. In extreme cases, high algal populations can deplete the water column of dissolved oxygen, resulting in fish kills, but the Chlorophyll a standards established by this regulation are no where near the levels that would deplete enough oxygen to cause harm. More research needs to be done to establish the rationale for the proposed standards; the current research is inadequate.	The AAC January and June 2005 reports provide documentation of this evidence.
HRPDC	Use of the median value to measure compliance with the Chlorophyll a standard is unsupported. Since there is no evidence that the proposed Chlorophyll a standard is harmful to the fishery, we believe that a better measurement of compliance should be to use the 95^{th} percentile of all readings taken during the growing season (March-October).	In the January 2005 AAC Report, both chlorophyll *a* and total phosphorus criteria were calculated using the median of the data set. However, at the request of the ad hoc advisory committee, the AAC re-evaluated the calculation of the chlorophyll *a* criteria for the 90^{th} percentile. The advisory committee had requested this re-evaluation because extreme (not medium or average) conditions cause impairments and the criteria should reflect those conditions. The AAC determined that the 90^{th} percentile was a more appropriate metric than the maximum value for criteria expression for chlorophyll *a* because the maximum value is biased by the number of observations while no bias by number of observations is apparent with the 90^{th} percentile.
HRPDC	Due to the environmental conditions that exist in Southeastern Virginia, lakes and reservoirs are typically turbid as a result of algal productivity. The blend of high temperature and direct sunlight creates perfect environmental conditions for algal growth. This results in naturally high Chlorophyll *a* concentrations as can be seen in most water bodies in warm temperate climates like our own. Trying to	The AAC retained in their criteria recommendations the EPA concept of criteria development by nutrient ecoregions so these concerns were addressed by this approach.

	achieve Chlorophyll *a* concentrations that are lower than those occurring naturally is unrealistic, overly burdensome, and impossible to obtain.	
LACA	Questions that DCLS can accurately measure 10 micrograms per liter of Total Phosphate as find variation in duplicate samples sent to DCLS. Participate in the Virginia Water Monitoring Council; some of the bigger municipal labs with trained chemists feel 20 micrograms is the lower limit of measurement with the EPA approved analytical procedures.	DCLS has several group codes for total phosphorus analysis and the low range method measures down to .01 mg/L.
SCo	Data collected must be representative of the entire reservoir. Questions whether citizen-collected data are representative and meet QA/QC standards suitable for regulatory purposes.	These issues are addressed in the agency implementation plan.
WCRO	Recommend retaining the Nutrient Enriched waters classifications for Smith Mountain Lake and the other three lakes listed because the companion Nutrient Policy requires a monthly average total phosphorus effluent limit of 2 mg/L for point source discharges over a certain flow. The impact of this point source control of total phosphorus in effluents to the lake over the past 20 years may have helped prevent impairments in Smith Mountain Lake from nutrient enrichment.	DEQ will recommend to the Board that the Nutrient Enriched Waters designations for the four lakes not be repealed because of the historical protection from nutrient enrichment that the companion Nutrient Policy effluent limits have provided.

Enter any other statement here: The agency also received comment on the draft implementation guidance and those comments will be addressed in the final version of this plan which will be completed prior to the effective date of the amendments.

List of Acronyms Used for the Organizations:

ACSA = Amherst County Service Authority, Dan E. French, Director of Public Utilities
ASA = Alexandria Service Authority, Glenn B. Harvey
EPA =US Environmental Protection Agency Region III, Tiffany Crawford and Mark Smith, US Environmental Protection Agency, Region 3, Water Protection Division
HRSD = Hampton Roads Sanitation District, Norman E. LaBlanc, Director of Water Quality
HRPDC = Hampton Roads Planning District Commission, Arthur L. Collins, Executive Director/Secretary
LACA = Lake Anna Civic Association, Dick Clark
PCo = Powhatan County, Kurt L. Hildebrand, Director of Facilities
MWV = MeadWestvaco, Thomas G. Botkins, Jr., Environmental and Product Stewardship Manager
RWSA = Rivanna Water and Sewer Authority, Robert C. Wichser, Director, Water & Wastewater Operations
SBos = Town of South Boston, Ted Daniel, Town Manager
SCo = Spotsylvania County, Thomas M. Slaydon, Director of Utilities
UOSA = Upper Occoquan Sewage Authority, Charles P. Boepple, Executive Director
VMA = Virginia Manufacturers Association, Brooks M. Smith, Hunton & Williams on behalf of VMA
VAMWA = Virginia Association of Municipal Wastewater Agencies, Inc., Frank W. Harksen, President

WCRO = West Central Office of the Department of Environmental Quality
WVWA = Western Virginia Water Authority, Michael T. McEvoy, Executive Director, Wastewater Services

All changes made in this regulatory action

Please detail all changes that are being proposed and the consequences of the proposed changes. Detail new provisions and/or all changes to existing sections.

Current section number	Proposed new section number, if applicable	Current requirement	Proposed change and rationale
9 VAC 25-260-5		Definitions	Added definitions for new terms used in the proposed amendments: 'algicide', 'epilimnion', 'lacustrine', 'man-made lake or reservoir', and 'natural lake."
9 VAC 25-260-50		Lists dissolved oxygen, pH and temperature criteria for Class I - VII waters.	Added a fourth footnote to the table in the dissolved oxygen column to recognize that for a thermally stratified man-made lake or reservoir, the dissolved oxygen criteria only apply to the epilimnion in the lacustrine portion of the water body.
9 VAC 25-260-187		None since this is a new section.	Lists man-made lakes and reservoirs that the Department has previously monitored or plans to monitor and the water body specific chlorophyll a and total phosphorus criteria to protect aquatic life and recreational designated uses in these waters from the impacts of nutrients. Allows for site specific modifications to the criteria if the nutrient criteria specified for a man-made lake or reservoir do not provide for the attainment and maintenance of the water quality standards of downstream waters. Reassigns Lake Whitehurst from a cool to a warm water fishery with the appropriate changes in the numeric criteria. Clarifies that water quality assessment of nutrient criteria (chlorophyll a and total phosphorus) will be based on the two most recent monitoring years with available data. Adds a process for confirmation of use impairments when the criteria are exceeded.
9 VAC 25-260-310		Contains site-specific and effluent criteria for various water bodies.	Adds two new site-specific criteria numerical nutrient criteria for the two natural lakes in Virginia: Mountain Lake and Lake

			Drummond.
9 VAC 25-260-480		Chowan and Dismal Swamp Basin Albemarle Subbasin section table.	Adds to special standards column the new site-specific criteria numerical nutrient criteria "dd" for Lake Drummond.
9 VAC 25-260-540		New River Basin section table.	Adds to special standards column the two new site-specific criteria numerical nutrient criteria "cc" for Mountain Lake.

Regulatory Flexibility Analysis

Please describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) the establishment of less stringent compliance or reporting requirements; 2) the establishment of less stringent schedules or deadlines for compliance or reporting requirements; 3) the consolidation or simplification of compliance or reporting requirements; 4) the establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the proposed regulation.

Since development of criteria for protection of lakes and reservoirs from the effects of nutrient enrichment is a national EPA initiative, EPA will promulgate the criteria if a state fails to do so. Therefore, the Department is proceeding with their nutrient criteria development plan that proposes fewer criteria and regulatory requirements that are not as burdensome on small businesses as the federal criteria. An estimated five of the 17 entities that will be affected by the proposed regulations are small businesses: Nine O Three Inc, Simmons Terminal and Restaurant, Callebs Cove Campground, Lake Anna Family Campgrounds, and Bolar Mountain Complex. These facilities may be required to remove part or all of the nutrients in their discharges and will incur an increased cost which will commensurately reduce their profits. However, these facilities have small discharges close to or below 0.02 million gallons per day (MGD), thus the impact of the proposed regulatory changes will likely not be significant. Since these small businesses are already VPDES permit holders with reporting requirements, the additional reporting requirements should not be overly burdensome.

Family impact

Please assess the impact of the proposed regulatory action on the institution of the family and family stability including to what extent the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one's spouse, and one's children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.

The development of water quality standards is for the protection of public health and safety, which has only an indirect impact on families.